



Volunteer Lake Assessment Program Individual Lake Reports

NUTT POND, MANCHESTER, NH

MORPHOMETRIC DATA

| | | | | | |
|-----------------------|-----|---------------------------|---------|-----------------------------------|------|
| Watershed Area (Ac.): | 415 | Max. Depth (m): | 9.2 | Flushing Rate (yr ⁻¹) | 3.1 |
| Surface Area (Ac.): | 16 | Mean Depth (m): | 4 | P Retention Coef: | 0.53 |
| Shore Length (m): | 950 | Volume (m ³): | 260,500 | Elevation (ft): | 237 |

TROPHIC CLASSIFICATION

| Year | Trophic class |
|------|---------------|
| 1981 | EUTROPHIC |
| 1995 | MESOTROPHIC |

KNOWN EXOTIC SPECIES

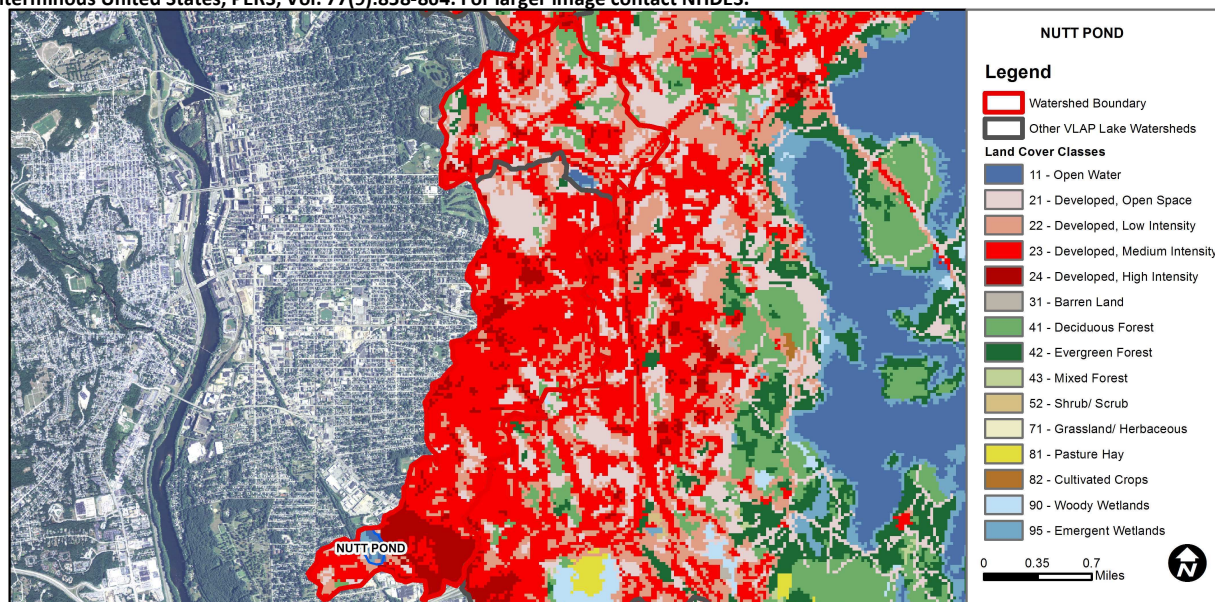
| |
|------------------|
| Brazilian Elodea |
| |
| |

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

| Designated Use | Parameter | Category | Comments |
|----------------------------|--------------------|--------------|---|
| Aquatic Life | Phosphorus (Total) | Slightly Bad | >/=5 samples and median is >threshold. |
| | pH | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances). |
| | D.O. (mg/L) | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances). |
| | D.O. (% sat) | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances). |
| | Chlorophyll-a | Slightly Bad | >5 samples and median is > threshold. |
| Primary Contact Recreation | E. coli | No Data | No Data for this parameter. |
| | Chlorophyll-a | Bad | >10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin. |

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



| Land Cover Category | % Cover | Land Cover Category | % Cover | Land Cover Category | % Cover |
|----------------------------|---------|---------------------|---------|----------------------|---------|
| Open Water | 0.8 | Barren Land | 0 | Grassland/Herbaceous | 0 |
| Developed-Open Space | 14.4 | Deciduous Forest | 3.22 | Pasture Hay | 0 |
| Developed-Low Intensity | 18.4 | Evergreen Forest | 0.59 | Cultivated Crops | 0 |
| Developed-Medium Intensity | 50.9 | Mixed Forest | 0 | Woody Wetlands | 0.01 |
| Developed-High Intensity | 10.9 | Shrub-Scrub | 0 | Emergent Wetlands | 0.52 |



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

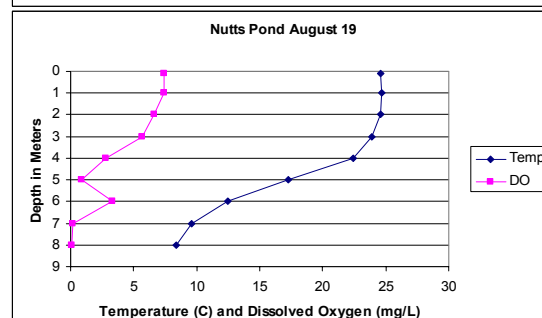
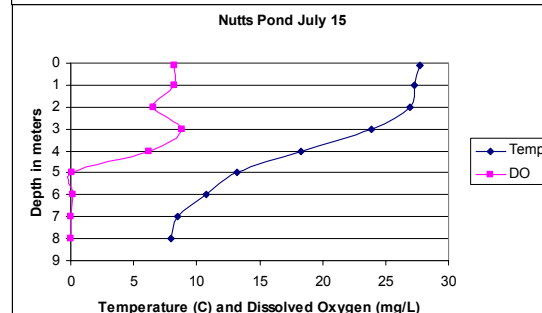
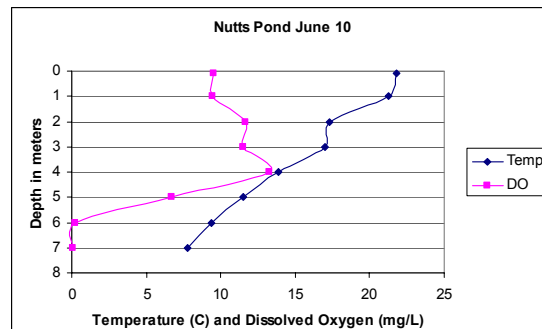
NUTTS POND, MANCHESTER, NH

2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- CHLOROPHYLL-A:** Chlorophyll levels were low in June and then increased in July and August. 2012 average levels were lower than 2011. Historical trend analysis indicates a significantly improving (decreasing) chlorophyll level since monitoring began. We hope this trend continues.
- CONDUCTIVITY/CHLORIDE:** Conductivity and were chloride elevated and indicative of the urbanized watershed. Hypolimnetic (lower water layer) conductivity is much greater than the epilimnion (upper water layer) and metalimnion (middle water layer) due to releases of organic compounds from the sediments under anoxic conditions.
- TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly greater than the NH lake median and were among the lowest phosphorus levels measured since monitoring began. Historical trend analysis indicates epilimnetic phosphorus tends to fluctuate annually. Hypolimnetic phosphorus levels were elevated due to the release of phosphorus from the sediments under anoxic conditions. Inlet phosphorus levels were slightly elevated however were stable throughout the summer.
- TRANSPARENCY:** Transparency was the highest (best) measured since monitoring began due to the decreased algal growth and stormwater runoff. Historical trend analysis indicates transparency tends to fluctuate annually.
- TURBIDITY:** Hypolimnetic turbidity was elevated throughout the summer months due to the accumulation of organic compounds under anoxic conditions.
- pH:** pH decreased to undesirable levels in the hypolimnion.
- RECOMMENDED ACTIONS:** Nuts Pond is an urban pond greatly impacted by its watershed. While it is recommended to address conductivity, chloride and phosphorus loading, we recognize the limitations in improving water quality. A positive sign is the significantly improving chlorophyll levels.

Dissolved Oxygen & Temperature Profile



| Station Name | Table 1. 2012 Average Water Quality Data for NUTTS POND | | | | | | | |
|------------------|---|---------|----------|-------|---------|--------|------|------------|
| | Alk. | Chlor-a | Chloride | Cond. | Total P | Trans. | | pH |
| | mg/l | ug/l | mg/l | uS/cm | ug/l | m | | |
| | | | | | | NVS | VS | |
| Deep Epilimnion | 16.4 | 5.73 | 190 | 652 | 15 | 4.08 | 4.00 | 1.20 7.05 |
| Deep Metalimnion | | | | 805 | 19 | | | 2.04 6.88 |
| Deep Hypolimnion | | | | 1776 | 114 | | | 92.97 6.36 |
| Inlet | | | 180 | 746 | 26 | | | 0.67 7.06 |
| Outlet | | | | 653 | 16 | | | 1.25 6.99 |

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

| Parameter | Trend | Explanation |
|-------------------------|-----------|--|
| Chlorophyll-a | Improving | Data significantly decreasing. |
| Transparency | Variable | Data fluctuate annually, but are not significantly increasing or decreasing. |
| Phosphorus (epilimnion) | Variable | Data fluctuate annually, but are not significantly increasing or decreasing. |

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:

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